FEDERALLY ENDANGERED

American Burying Beetle

(Nicrophorus americanus)

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Description

The striking red-on-black coloration and large size of the American burying beetle is remarkable (at least in invertebrate terms!), and it is unfortunate that this extraordinary "king of the carcass" is no longer commonly seen. The American burying beetle is the largest member of its genus in North America. Adults vary in body length from 1 to 1½ inches. This beetle is identified by its distinctive coloration of a black body with orange-red marks on the upper frontal head plate and on the plate just behind the head. Each wing has two bright orange-red spots. The antennae have large, orange tips, which are used to detect scent. Sexes are distinguished by the shape of an orange-red facial mark on the front of the head: males have a large rectangular mark, while females have a smaller triangular mark. American burying beetles are often covered with swarms of small red mites that help to keep the beetles clean and free of parasitic insect eggs.

Range and Habitat

Formerly, the American burying beetle ranged widely across eastern North America, occurring in 35 states from Nebraska to Maine, and south to Texas and Florida. However, the species has disappeared from most of its range and is currently found in significant numbers at only two locations. Block Island off the coast of Rhode Island supports a population of approximately 500 beetles, and a more widely dispersed and smaller population exists in Oklahoma. Individuals have also been found in Arkansas and Nebraska. The American burying beetle historically occurred in southwestern Maine, with a few locations in central Maine. However, recent searches for the beetle have been unsuccessful. The beetle likely has been extirpated in Maine as it has throughout much of its range. However, it is still officially classified as endangered and may yet be found here.

The American burying beetle is associated with several habitat types, ranging from grasslands and forest edges to woodlands. The Block Island habitat occurs on glacial moraine and has a variety of vegetation types ranging from mowed and grazed fields to shrub thickets. More important than the vegetative and physical characteristics of the habitat is the presence of adequate food in the form of small bird and mammal carcasses. Reduced availability of carcasses may have caused the decline of the beetle. Soil conditions conducive to digging and burying are also important. Well-drained soils with some clay, a detritus layer, and level topography are typical of American burying beetle sites.

Life History and Ecology

The American burying beetle has a fascinating life history and ecological role. It is active from late April through September. Adults are nocturnal and use their keen sense of smell to find remains of dead vertebrate animals on which they feed. Beetles can detect a carcass from two miles away.

Reproduction occurs primarily in June and July and depends on the availability of carrion. Carcasses of small vertebrates weighing approximately 100g (birds and small mammals) are used as a food source during the breeding period. Large carcasses (over 100g) of birds and mammals are needed for successful reproduction. Males locate carcasses after dark and emit pheromones to attract females. Fights between arriving males and females ensue until one male and female drive the others away and claim

the carcass for themselves. The two then crawl underneath the carcass and drag it to a suitable substrate for burying. They excavate a hole, bury the carcass, remove hair and feathers, cover it with secretions that slow the growth of bacteria, and lay up to 30 eggs in a brood chamber next to the carcass.

The eggs hatch in about four days, and the young are fed by the adults. Such parental care is unusual in insects other than social bees, wasps, and ants. The larvae develop over a 6-12 day period, then they disperse into the nearby soil to metamorphose into adults. They emerge as adults in 48-60 days, overwinter in the soil, and reproduce the following summer. Adults die after reproducing or during the overwintering period.

Threats

The American burying beetle underwent a precipitous decline in population and distribution during the 20th century. East of the Appalachians, most of the decline occurred prior to the 1920s. Elsewhere the decline occurred later. Reasons for the decline of the American burying beetle are unclear, but the most plausible explanation is habitat fragmentation and reduced food supply. Fragmented habitats decrease the reproductive success of many birds and smaller mammals, while increasing the presence of mid-sized predators such as raccoons, skunks, and foxes. These predators reduce the number of small birds and mammals and also compete with the American burying beetle for carcasses. Young passenger pigeons and greater prairie chickens were within the size range of carcasses favored by the American burying beetle, but are now extinct. Their demise may have affected burying beetle populations.

Conservation and Management

The American burying beetle was listed as federally endangered in 1989. Federal recovery efforts have been focused on preventing extirpation of existing populations, locating additional populations, and captive breeding for reintroduction of the species. Reintroductions have occurred on Nantucket and Penikese Islands in Massachusetts, and have shown initial signs of success.

Current recovery efforts are underway to protect existing populations and establish new ones in suitable sites. Habitat fragmentation should be limited in these areas, to prevent competition from predators that are common in disturbed environments. Other factors that would limit the prey base should be ascertained and steps taken to reduce their impact.